

Strategies for Optimizing Sustainable Therapeutic Outcomes Related to the Treatment of the Movement System

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ABSTRACT

Physical therapists and their patients want to achieve the highest level of movement and function using the most effective interventions in as short a timeframe as possible. The path to this outcome is rarely linear and is impacted by a number of variables, only some of which are within the physical therapist's control. The physical therapist must listen and attend to the patient's perspective on the gap between current and preferred movement, and be armed with the most current best evidence to narrow that gap. Beyond use of best evidence for interventions, understand the impact of issues in the cognitive and affective domains that can facilitate or impede progress. These might include patient and therapist mental models, previous experiences, family and peer support, self-efficacy, co-morbidities, and health behaviors. These issues can impact exercise and home program activity dosage and patient education can mitigate barriers to independent exercise prescriptions. A number of dosage variables are available, and patient education regarding use of these variables to keep exercise activity and loading within tolerance is essential. Additionally, the psychomotor aspects of the exercise program should be designed for success, with an exercise prescription remaining within what the patient can safely and effectively perform. Outcome tool choice should be patient-centric, reflecting the movement limitations important to that individual patient. The tool must also have psychometric properties that are appropriate for the intended use. Finally, the physical therapist is charged with ensuring that outcomes are sustainable beyond discharge from formal therapy, and that discharge planning includes a seamless transition into exercise and activity for a lifetime of health and wellness.

Key Words: treatment outcome, health status indicators, outcome assessment, lower extremity

LEARNING OBJECTIVES

At the conclusion of this monograph, the participant will be able to:

1. Distinguish between the strengths and weaknesses of common outcome tools and apply such tools to the movement systems approach.
2. Ascertain and apply the impact of patient/client priorities, preferences, beliefs, and resources to intervention and outcome tool choices.

3. Incorporate data from the biopsychosocial model of functioning and disability to impact adherence into interventions and effective and efficient outcomes specific to the patient.
4. Use optimal dosage parameters and progression to maximize adherence and effective and efficient outcomes, including patient education, to achieve and sustain their desired movement outcomes.
5. Apply interventions appropriate to the biopsychosocial model incorporating motor control concepts and the patient's priorities, environment, and level of commitment into consideration to optimize outcomes.

INTRODUCTION

Patients seek the care of physical therapists for a variety of reasons. Fundamentally, patients want to improve their ability to move and function in their usual and expected roles. As experts in the movement system, physical therapists are uniquely qualified to assess patients' movement and guide them through the process of achieving their desired movement capabilities. Determining limitations in movement, considering patient preferences, and designing a program to close the gap between current and preferred performance may seem straightforward. However, like any other *process* many variables can interfere with that linear path. Consider the process of manufacturing any item such as electronic equipment. As that item moves down the factory line, there are more opportunities for inputs, both positive and negative, that affect the quality of that final outcome. Similarly, patients possess multiple inputs (positive and negative) from prior experience and current influencing of personal and environmental factors, and will acquire future inputs that occur during the episode of care. This *process* then must be considered dynamic with the patient-physical therapist communication central to ensure the most efficient and effective path from current to preferred performance. While the physical therapist may have a vision of the patient's path from initial assessment to discharge and beyond, failure to include sufficient input, partnering, and agreement from the patient, may result in a poor outcome. The best designed program will be of little use if patients do not adhere to it due to lack of understanding, misalignment with their own priorities or unidentified barriers, or are not performing activities correctly.

Multiple factors affect the process of patient care from initial evaluation to discharge and beyond. Some of these factors are outside the control and influence of the physical therapist, but must be acknowledged so that the most efficient and effective care is provided. Personal and environmental factors are often beyond the immediate control of the physical therapist. Some of these might include age, gender, fitness level, co-morbidities, family support, work and societal support or barriers, or physical barriers. Palazzo et al¹ note a number of barriers to adherence to a home exercise program in patients with low back pain. A qualitative study found that barriers to adherence

could be classified as the exercise program itself (number, effectiveness, complexity, and burden of exercises), process issues (breakdown between supervised sessions and home exercise, communication, and follow-up), personal factors (perceptions, depression, motivation), and environment (attitudes of others, planning barriers).

In a patient-centered approach to patient care, acknowledging factors that either support or impede a successful outcome allows the patient-therapist team to capitalize on supports as well as work within barriers. Other factors are within the knowledge, skills, and abilities of the physical therapist, and should be employed to optimize outcomes. These might include cognitive, affective, and psychomotor aspects of movement, correct dosage and progression of the rehabilitation program, and choosing the right outcome tool to assess changes in movement. Cognitive aspects of the interaction include listening, informing, educating, discussing, and planning skills related to the interaction. Affective domain factors are related to motivation and adherence to the rehabilitation program during and beyond formal physical therapy, while psychomotor domain factors might include *which* activities, as well as how and *where* activities are performed. Clearly interactions exist among all these domains. The purpose of this monograph is to explore these factors and how they might impact sustainable physical therapy outcomes.

PATIENT ENGAGEMENT: COGNITIVE DOMAIN

Physical therapists are in a unique position to design and support ongoing therapeutic exercise for specific movement limitations and for general health. Physical therapists are experts in the assessment of movement and the prescription of therapeutic exercise, the primary intervention used by physical therapists.² Additionally, physical therapists typically have more face-to-face time with patients than many other health care providers, providing an opportunity to identify barriers and opportunities for patient-centered care.³ The initial assessment is the ideal time to assess patient preferred learning styles, priorities, and expectations. In the cognitive domain, physical therapists can impact outcomes through clarifying mental models, educating and communicating effectively, and assessing patient readiness to participate in a rehabilitation program.

Patients enter physical therapy with a pre-existing set of theories about their pain and movement dysfunction and expectations about their plan of care. These expectations may have come from their own or other's prior physical therapy experience, from expectations set by a referring provider, or from preconceived ideas formulated over time. For example, if patients believe that their pain and movement dysfunction arises from an anatomical structure that can only be improved with surgery, then the physical therapist may be challenged to convince them of the benefits of physical therapy. Similarly, if patients believe

that their pain arises from too much activity, then they might avoid any exercise including physical therapy.

Rizzo⁴ notes that a patient's mental model guides decision-making and directs action. A mental model is a set of beliefs and thought processes collected through a lifetime of experiences that help individuals understand the world around them.⁴ As individuals engage in new or novel situations, mental models are modified based upon new information. Patient engagement starting at the initial visit must explore and acknowledge patients' mental models to maximize adherence. Patients have an existing mental model of what it means to participate in a rehabilitation program, what outcomes are expected, and in what timeframe. The face-to-face visits are an ideal time to explore a patient's mental model through questioning, in an attempt to uncover prior experiences and beliefs that may impact adherence. Research into recovery from athletic injuries suggests that previously injured athletes are better able to focus on their rehabilitation program than first-time injured athletes; the lack of knowledge in those first-time injured athletes leads to a lack of confidence in their ability to be successful.⁵ Milne et al⁶ found that athletes who had 3 or more injuries were significantly more confident in their ability to perform their rehabilitation program (a form of task efficiency) than those sustaining a first time injury.

If a patient states "I believe in no pain, no gain" relative to the rehabilitation program, the physical therapist can ask the patient where this was learned and/or why it is believed. Occasionally the problem is simply a language barrier and not a true discrepancy between mental models. Medical professionals tend to use terminology based in a disease model (pathophysiological basis of disease) while patients use illness model language (a narrative structure of illness).⁷ Exploring the basis of patient statements and clarifying terminology and language can elucidate the underlying beliefs. This type of questioning can expose underlying beliefs that may impact adherence and can provide an opportunity for modifying mental models if inconsistent with best evidence. If discrepant beliefs are shared among a group (exercise class, team, family members, training club, etc), a barrier to physical therapy advisement and program adherence may be formed.

During the face-to-face visits, determine the patient's existing beliefs and thought processes regarding the rehabilitation program priorities and expectations. Explore previous experiences, feelings, or beliefs about their health condition and willingness to adhere to a program. Importantly, ongoing participation in other activities and routines (ie, walking the dog, a specific dietary regimen, daily yoga, etc) suggests an underlying belief and action plan that may influence adherence to a rehabilitation program.⁸ Understanding the underlying motivation for adherence to these activities provides an opportunity to use that motivation for a rehabilitation program. If the patient has

a regular routine for any activity, question the motivation for this adherence and see if that motivation can be transferred to a home exercise program.

The physical therapist must also determine any lack of alignment between his or her personal mental model of the rehabilitation experience and the patient's. For example, the provider may have a plan of face-to-face therapy twice per week for 6 weeks with a home exercise program 3 days per week, followed by discharge to an independent self-management program to sustain gains made in physical therapy. In contrast, the patient may have a vision of face-to-face therapy 3 times per week for 12 weeks, with little to no home exercise. Moreover, patients may believe that once they are discharged, the rehabilitation program ends. Positive long-term health priorities dictate that outcomes be sustainable beyond the end of formal physical therapy.

Building Block 1: A 72-year-old male presented to physical therapy 6 weeks following an acute left Achilles rupture. His physician had provided him with a strict rehabilitation protocol that was to be initiated at 8 weeks, with a very slow advancement every two weeks. The patient was a well-known local businessman who felt confident that he should be seen by a physical therapist 3 times per week until the completion of his therapy. He insisted that his previous physical therapy for a knee problem had occurred with this frequency. The physical therapist felt that this frequency was unnecessary given the limitations of his healing process, but was at odds with the patient's strong assertions and beliefs. A compromise was reached where the patient was placed on an independent "home" exercise program that was performed 3 times per week in the clinic facility. The patient paid a small fee to use the clinic facility and physical therapy charges were rendered only on days that he met with the physical therapist.

For patient mental models that are incomplete or in conflict with the physical therapist, gradually providing new information to bring models in alignment is more likely to be accepted than an authoritarian perspective. In general, people tend to reject information that is inconsistent with their existing beliefs.^{4,8} Rather than "educating" patients by providing information that is in direct conflict with their mental model, consider a graduated approach where new information and new experiences are presented incrementally. For the patient who believes "no pain, no gain," consider negotiating an agreement of trialing movement activities that do not elicit pain, or keep pain below an agreed upon level. For patients who do not include a

home exercise component of their rehabilitation mental model, provide only a few simple activities. Success in these activities provides new positive experiences that can reshape mental models. This principle underscores the importance of patient education and effective communication.

Patient Education

Patient education is a common strategy used to help patients engage cognitively or devise a positive mental model for adherence to their rehabilitation program. For patients who have beliefs about the pain experience and what it means, education about pain using an illness model can bring the patient and therapist into alignment in a way that supports adherence. Education can take many forms and can be offered at many levels, depending upon the patient's interest and preferred learning style. Gahimer and Domholdt⁹ studied the amount of patient education provided and the reported patient change in an outpatient orthopaedic clinic. Patient education statements by the physical therapist were categorized as: (1) information about illness, (2) home exercises, (3) advice and information, (4) health education, and, (5) stress counseling. The majority of educational statements related to information about illness, advice and information, and home exercises. The therapist teaching behaviors did not correspond to the patient or therapist perceptions of teaching. Additionally, 84% to 87% of patients self-reported making changes due to this education, while stating that health education and stress counseling were not applicable to their care.⁹ This belief is also reflected in the low number of physical therapist statements in these domains.

It is difficult to tease out the interaction between physical therapy interventions and the associated teaching that happens during the treatment sessions. Physical therapists report including patient education in more than 80% of their patient interactions.¹⁰ Research conducted in neck pain showed greater improvements in patients who received education in combination with physical therapy treatment compared with those who received education only; research in patients with chronic low back pain showed improvements in function with education only.^{11,12} The type of education provided should be patient-specific and based upon stated or observed movement needs. Patient (and family, if applicable) centered engagement in shared decision-making is essential to adherence.¹³

For patients who are afraid to move or exercise for any number of reasons may benefit from education focused on the importance of exercise, how to move safely, and stress management. A study of patients with work-related acute low back pain and high fear-avoidance showed significantly higher return to work rates with traditional physical therapy plus education compared with patients who had traditional therapy only.¹⁴

Building Block 2: A 63-year-old patient was referred to the pool for aquatic physical therapy due to pain and decreased endurance in the presence of hip osteoarthritis. She was reluctant to participate in exercise because she had pain when she performed land-based exercise or walked. She had previously been a walker for exercise, and walked with two friends, which was also a social outlet for her after her husband's death. She was feeling down and isolated. Understanding the culture of this aquatic environment, the physical therapist asked the patient if she was comfortable focusing primarily on walking-focused movements during her session. The patient agreed, and as she continued to walk she was able to observe other patrons performing similar activities and was able to move without pain. After two visits, the patient requested a home exercise program to perform in the pool between visits with the physical therapist. The patient was able to progress her physical therapy program to include more structured exercises to increase her endurance, and enjoyed the socialization that occurred in that environment. At discharge, she joined an aquatic exercise class on the days she did not walk with her friends.

Along with understanding patients' mental models and using terminology that is clear to them, being aware of readiness to participate in a home exercise program can guide the plan of care. Health behavior models provide a framework and language for understanding readiness to initiate and sustain a home exercise program.

Health Behavior Models

As the number of chronic health conditions continues to increase, physical therapists are in a unique position to support and advise patients in a lifestyle of physical activity. Incorporating health behavior models into rehabilitation is recommended as an important step in successful patient outcomes.^{15,16} For patients who are apprehensive about participating in a rehabilitation program, or the home exercise component, assess their participation readiness through a behavior change model. This allows the physical therapist to match their language and expectations with the patient's. Behavior change models have been applied to efforts to *eliminate* unhealthy behaviors (smoking, drug/alcohol abuse) and to *encourage* healthy behaviors (eating habits, exercise, medication adherence). A number of health behavior models exist including the Health Belief Model, the Health Locus of Control, Self-Efficacy, Transtheoretical Model (TTM), and the Multi-theory Model (MTM).¹⁷⁻²⁰ Each model has its strengths and weaknesses and may apply more effectively in some domains than others.²¹ The Transtheoretical (or Stages

of Change) Model has been frequently applied in the exercise domain.²²

The TTM is temporally based, underscoring a person's ability to make change over time. The model consists of 5 stages, and individuals may spend variable lengths of time in each stage, or may stay in a stage.²² The stages in this model include *precontemplation*, *contemplation*, *preparation*, *action*, and *maintenance*. Individuals in the precontemplation phase state that they have *no* intention of changing behavior in the next 6 months, while those in the contemplation phase state that they *are* planning to make a change in the next 6 months. Preparation phase participants are planning to change in the next month, or have made some, but not all, changes already. Individuals in the action stage have reached some predetermined level of change within the past 6 months, and those in the maintenance phase have reached that level of change more than 6 months previously.¹⁹

Building Block 3: A 70-year-old female returned to physical therapy after declining it 18 months earlier. Previously she had sustained a knee injury that was not recovering as quickly as she would like and was sent to physical therapy. She insisted that physical therapy would not help because she also had osteoarthritis, and many of her friends underwent total knee replacement and were doing fine. She felt that a knee replacement was the right answer for her. Trying to convince her that she should consider physical therapy at this point would likely have been unsuccessful. After several months and visits to physicians who suggested that a knee replacement was not in her best interest at the current time, she returned to physical therapy, now at a stage where she was ready to participate.

The TTM, as well as others, have come under scrutiny for their ability to capture relevant information to classify and predict behavior change. A meta-analysis of the TTM in the physical activity domain found that the model generally held because core constructs were distinguishable between stages and most changes followed the direction predicted by the model.²¹ However, current data could not determine if changes in physical activity occurred through stages that were qualitatively different, or if the changes simply occurred along a continuum.²¹

The MTM has been proposed as an alternative approach for understanding and predicting behavior change in health conditions.^{20,23} Although the MTM is relatively new and has not been studied to the same extent as the TTM, it is worthwhile to examine the structure and constructs in the context of patient-centered care. The MTM, as its name implies, draws from a number of different theories and incorporates them into a model to predict both initiation and adherence to a health behavior. The model distinguishes between the characteristics

associated with initiating a health behavior and sustaining that behavior over time. The constructs underlying the initiation of a health behavior include *participatory dialogue* (from models of adult education), *behavioral confidence* (from the principle of self-efficacy and perceived behavioral control), and *changes in physical environment* (from social cognitive theory).^{20,23} The constructs that underlie sustaining a health behavior include *emotional transformation* (from emotional intelligence theory), *practice for change* (from adult education model), and *changes in social environment* (from social support theories).^{20,23} This model has been used in college students to predict water consumption and to predict the initiation and continuation of physical activity.^{24,25}

Participatory dialogue is consistent with a patient-centered examination, emphasizing a two-way communication that explores perceived benefits and barriers and pros and cons of initiating a health behavior change. Education that is patient-centric and provided at an appropriate level can facilitate this change by emphasizing benefits of participation. Behavioral confidence focuses on the confidence to change a health behavior, and this confidence can come from internal (self-efficacy) or external (health care provider, family member) sources. Having a dialogue with patients about their confidence in performing the home exercise program can enhance adherence. Let patients know that exercises can be modified or changed in ways that boost their confidence in being successful with the program at home. This is particularly true in the case of mental models that exhibit fear of movement or fear of getting hurt. Patients with neck and back pain who received clarification of doubts from their physical therapist were 4 times more likely to have higher levels of frequency adherence (odds ratio = 4.1).²⁶

Building Block 4: A 32-year-old male with obesity (body mass index = 45) developed patellofemoral pain while walking for weight loss. He was anxious about doing more damage to his knee if he continued walking, but wanted to get back to it for stress relief and weight control. He was highly anxious, and also voiced concern that his knee be examined to ensure that there were no tumors because he could feel a bump on his kneecap. His examination showed mobility deficits in his patellofemoral joint primarily associated with osteoarthritis. His tibiofemoral joints were well preserved. He was encouraged to walk, with education about dosage, the importance of mobility in joints, and the detrimental effects of prolonged sitting. Importantly, he was encouraged to keep a log of how far (distance) or how long (time) he walked and what his pain level was. This information was used to help him see patterns in his activity and pain, and to provide guidance on dosage.

The construct of changes to the physical environment considers only the physical environment (availability, access, convenience of resources) and not the social environment. Social support is an important construct in the continuation of a health behavior change, while the physical environment plays a greater role in the initiation of activity.^{20,25} When discussing confidence in the ability to initiate a home exercise program, consider the physical environment and ensure that the patient has an easy, accessible place to perform the exercises at home.

Research into the usefulness of the MTM in physical activity found that the primary factors affecting initiation of a physical activity program were advantages outweighing disadvantages, behavioral confidence (self-efficacy and perceived behavioral control), work status, and changes in the physical environment. Emotional transformation, practice for changes, and changes in the social environment affected physical activity sustenance.²⁵ Similar to the MTM, Geidl et al¹⁶ suggest that health behavior theories describe behavior change as a two-step process: motivational and volitional. The motivational phase is influenced by personal determinants, risk perception, outcome expectations, self-efficacy, goal intention, and self-concordance. The volitional phase requires transferring that motivation into action and requires planning, initiation, and maintaining the behavior. These processes reinforce those identified in the MTM.

Throughout the plan of care and as discharge planning commences, consider the factors associated with sustaining the home exercise program. Emotional transformation requires patients to focus their emotional energy toward a goal, in this case, participating in the rehabilitation program. To that end, elucidating patient-specific movement goals and constructing a rehabilitation program that is clearly linked with that goal will support patients in their motivation to participate. Practice for change is supported by self-reflection and can be reinforced by use of a diary or a log of the home exercise program.^{20,25} Use caution when using a patient log to measure adherence. Research has found that home exercise diaries and patient self-reports of adherence show poor to moderate correlation with accelerometer data.²⁷ Finally, understanding patients' social environments is essential to sustaining physical activity. This includes discussion with patients about support they have from family, friends, and co-workers, as well as demands that will be a barrier to ongoing participation.

PATIENT ENGAGEMENT: AFFECTIVE DOMAIN

Patients come to physical therapy with a pre-existing view of their condition and a baseline level of motivation to participate in improving their movement limitations. Adherence and motivation are affective domain issues that can impact outcomes of physical therapy care. While the term "compliance" is often used in medical clinics, it is defined as "acting in accordance with, or the yielding to a desire, request or condition."^{28(p383)} For the purposes of this monograph, the term "adherence" will be used. The World Health Organization defines adherence in

the context of medical care as “the extent to which a person’s behaviour...corresponds with agreed recommendations from a healthcare provider.”^{29,30} While this seems like an obvious definition, unpacking this definition reveals many interconnected layers of complexity associated with human interaction. Adherence to medical advice is multi-dimensional and can include keeping and making appointments, following advice, and completing home exercise programs. Research suggests that adherence to outpatient physical therapy recommendations are limited.^{26,31,32} A systematic review of home exercise program adherence in patients with chronic low back pain found up to 70% nonadherence.³³ Adherence in injury rehabilitation reportedly ranges from 30% to 70%.⁶ Increased adherence to exercise programs can improve outcomes.³⁴⁻³⁶

A systematic review of outpatient physical therapy found several barriers to treatment adherence including low self-efficacy, depression, anxiety, helplessness, low baseline activity levels and low in-session exercise adherence, limited social support, pain during exercise, and greater perceived barriers to exercise.³⁰ In patients with chronic low back pain, the individual factor associated with increased adherence to a home exercise program was a higher health locus of control while intervention factors associated with increased adherence were supervision, participation in an exercise program, and participation in a general behavior change program that included motivational strategies.³³

Individual and personal characteristics impact adherence through a complex system. Self-efficacy has been widely studied in relation to adherence with a number of medical recommendations, most notably exercise, and with outcomes.³⁷⁻⁴³ Awareness of these self-efficacy dimensions at the initiation of physical therapy can help to identify any factors that might negatively impact outcome. Three subtypes of self-efficacy relative to exercise have been identified.^{37,44} The *task* subtype describes one’s confidence in the ability to carry out a certain task in a specific context. *Barrier* efficacy is the confidence to perform a task in a challenging situation or to overcome barriers (social, personal, environmental) while *scheduling* efficacy is the confidence one has to plan and schedule effectively for carrying out the task.^{44,45} Barrier and scheduling efficacy are often considered together under the term *coping* efficacy, and describe the confidence in planning and performing tasks under challenging conditions.⁴⁵ Other forms of self-efficacy have been described such as efficacy directly related to the rehabilitation process (action, maintenance, and recovery self-efficacy)⁴⁶ (Table 6.1).

Measures of self-efficacy as well as behavioral interventions to improve self-efficacy have been correlated with adherence to exercise, to rehabilitation programs, and with outcomes.^{6,33,38,39,41,43,45,47} Providing high efficacy feedback has been shown to improve the affective response associated with exercise in women.⁴⁰ Women who received high efficacy feedback reported significantly less fatigue, less psychological distress, and more positive well-being during and after exercise. Interventions to increase self-efficacy included giving positive feedback,

highlighting progress and improvements, showing graphs of improvement, and making positive comparisons against norms. In patients with soft tissue shoulder injuries, moderate to strong correlations were found between self-efficacy and behavioral intentions, between behavior intentions and adherence, and between adherence and postintervention outcome scores.⁴⁸ McAuley et al⁴⁹ found that higher levels of executive functioning and use of self-regulatory strategies increased exercisers’ beliefs in their capabilities and enhanced adherence to an exercise program.

Building Block 5: A 43-year-old female who had previously been successful with a physical therapy program for low back pain returned with new thoracic back pain and limited rotational mobility. She had spent 3 months out of the country employed at a different workstation that required a great deal of twisting. She requested an assessment of her thoracic spine and a home exercise program to improve her mobility and her upper back endurance. After assessment and provision of a home exercise program, she requested to return in 4 weeks because she felt confident in her ability to manage her program. At her 4 week follow-up, she requested a review of yoga poses she was having difficulty with, so she could return to her usual yoga class. Although the physical therapist considered a number of different exercises that might improve her mobility and endurance, and a more frequent follow-up, the patient’s preferences served as the starting point and framework for the intervention program.

However, while self-efficacy is an important aspect of adherence, it is unclear how much of the variance in exercise program adherence is related to self-efficacy and how much to other factors. Sacomori et al⁵⁰ found that the addition of self-efficacy interventions did not increase adherence to a pelvic floor program significantly more than exercise mastery. Interestingly, Rizzo⁴ posits that commonly described barriers to adherence such as self-efficacy might be viewed through the lens of mental models. Interventions aimed at self-efficacy may be ineffective if the underlying mental model that led to poor self-efficacy is not addressed. Uncovering the prior experience(s) that led to the patient’s current beliefs and expectations can provide the physical therapist with an opportunity to create a new, more positive experience that may revise the mental model.

For patients who demonstrate low self-efficacy at intake or follow-up (“I have not found time to do my exercises.”) and mental models have been explored, consider interventions to enhance self-efficacy. For others, focus on the characteristics of each individual that support his or her own adherence. Patients who articulate barriers that would prevent them from adhering

Table 6.1. Sample Statements of Different Forms of Efficacy*

Form of Efficacy	Sample Statement
Task	I am confident that I can perform all the prescribed rehabilitation exercises.
Coping	I am confident that I can perform all the prescribed rehabilitation exercises even if there is discomfort.
Action	I am confident that I can do my home exercise program at the recommended dosage every day.
Maintenance	I am confident that I can perform my home exercise program every day even if I am tired.
Recovery	I am confident that I can return to my home exercise program even if I have not done it for a few days.

*Adapted from Wesch et al⁴⁵ and Clark and Bassett.⁴⁸

to a home exercise program (lack of social support, time, fear, pain, etc) may benefit from additional support to bolster their self-efficacy or to revise their mental model. This might include revising a home exercise program to only a few exercises that can be completed while performing other usual activities (ie, taking a walk or climbing the stairs on a work break rather than sitting; stretching while watching the nightly news, etc) or reassuring the patient in regard to pain expectations, etc.

Other associated psychological characteristics that negatively affect adherence are depression, anxiety, low self-motivation, and a high degree of helplessness.^{1,43,51} Qualitative reports of psychosocial barriers to exercise adherence suggest that a feeling of being supported is necessary to improve adherence.¹ A systematic review of reviews on adherence found that social support, particularly *practical social support* (as compared with emotional and undifferentiated support) had the strongest positive affect on adherence.⁵² Older adults with knee osteoarthritis and co-morbid depression who participated in an internet-based cognitive behavioral support program showed decreased depression, improved self-efficacy, and also improved stiffness, pain, and function at follow-up.⁵³ For patients who have mild to moderate or severe depression, participation in ongoing exercise improves body image, ability to cope with stress, and quality of life.⁵⁴ Physical therapists should be aware of signs of depression (low motivation, loss of interest, fatigue, fear of movement) and make appropriate referrals and provide encouragement for exercise as a part of a comprehensive health program. While face-to-face interaction is associated with more patient satisfaction, a

patient-centered program that meets individual needs can provide sufficient patient support.⁵⁵

Effective intervention in the framework of the affective domain requires understanding the attitudes and beliefs of both the treating therapist and the patient.⁵⁶ Research suggests that physical therapist attitudes and beliefs regarding chronic musculoskeletal pain continue to be rooted in the biomedical model despite the shift to a biopsychosocial model of health care.⁵⁶⁻⁵⁹

PHYSICAL THERAPY DOSAGE

Improving outcomes in patients with lower extremity limitations requires appropriate dosing of the rehabilitation program, including the therapeutic exercise. Some common issues associated with dosing the physical therapy program include choosing the right movement limitation to set goals around and choosing appropriate activities to reach that goal. Activity choice requires a patient-centric approach, not just what the therapist chooses as the best activities. This choice requires consideration of the patient's preferences, attitudes, mental model, confidence, and resources. Other key issues include determining the frequency of face-to-face interaction and independent therapeutic exercise, prescribing appropriate frequency, intensity and duration of activities in clinic and at home, providing appropriate education on the performance dosage, and attending to the psychomotor aspects of therapeutic exercise.

Matching Goals with Activities

Understanding patient priorities and preferences begins with the initial physical therapy visit. While attending to the key issues in the cognitive and affective domains associated with adherence, listening to patient priorities and preferences will guide intervention choices. If patients report that limited mobility in a hip or knee is their primary concern, then interventions directed at increased mobility should be a priority, even if weakness or other impairments are found during the examination. This intervention could include manual therapy, therapeutic exercise, or modification of dynamic or static postures or movements. Using an outcome tool such as the Movement Ability Measure (MAM) and a conceptual framework such as the World Health Organization's International Classification of Functioning and Disability (ICF) can help guide the conversation about the key issues that brought the patient to physical therapy.^{16,60-62}

The ICF is divided into two major parts, each with subcategories.⁶² The first part emphasizes impairments of body structures and functions as well as activity limitations and participation restrictions. The second part focuses on contextual factors of environment and personal factors.

Body structures refers to the structural or anatomical parts of the body such as organs, limbs, and their components. Impairments of body structures refers to loss of or abnormalities in structures such as hip anteversion, genu varum, genetic defect, or traumatic limb loss. *Body functions* refers to the functions

of those body systems, including psychological function. Physical therapists often treat patients who have impaired muscle performance, aerobic capacity, balance, posture, or joint mobility. Historically physiologic impairments were the focus of treatment due to the ease of measuring improvement and the assumptions that improved impairment led to better function, meaning decreased limitation or restriction in activities and participation. Physical therapists also address impairments of body structures and functions by use of braces, supports, or other accommodations.

The relationship between impairments and function is both direct and indirect. For patients whose primary reason for seeking physical therapy is because of an impairment, intervening directly at the impairment level should address patients' concerns. For example, a patient whose primary complaint is stiffness in the hip joint would benefit from interventions directed toward increased hip mobility (joint mobilization, manual therapy, stretching, etc). For patients with impaired balance, direct balance training is beneficial and should produce positive outcomes. Indirectly, patients may describe difficulty getting their shoes on which the physical therapist determines to be primarily due to impaired hip mobility. The same interventions directed at the impaired hip mobility may be necessary in addition to practicing the functional activity.

Activity is defined as the execution of a task or action by an individual while *participation* refers to involvement in life activities.⁶² These components have both positive and negative aspects with the negative side classified as *activity limitations* and *participation restrictions*. Improving patient outcomes requires addressing the activities patients are having difficulty with so that they may continue to participate in usual and expected life roles. Examples of activity limitations include limited ability to negotiate stairs, get in and out of a chair or car, walk a necessary distance or speed, stand for a given length of time, run, or jump. These activity limitations may contribute to participation restrictions, where individuals are unable to perform usual roles as a parent, worker, or athlete. Improving outcomes requires providers to determine which movements and activities are the most valued by the patient and are also problematic, and match direct interventions toward those movements in the context that the patient needs to perform them. These are the activities that are frequently queried in standardized outcome tools. However, knowing the activity limitation does not provide information on the cause of the activity limitation. The underlying movement domain (strength, mobility, speed, etc) needs to be determined.

The MAM provides an additional template that can guide assessment and intervention thereby directing treatment and improving outcomes. The MAM was created in an attempt to better define the domain of *movement* and was developed out of the Movement Continuum Theory (MCT), proposed as a grand theory of physical therapy.⁶⁰

The MCT has 3 general and 6 specific physical therapy principles. The general principles suggest that movement is es-

sential to life; that movement occurs along a continuum, from the microscopic level to the level of the whole person functioning in society (similar to ICF participation); and that movement is influenced by *physical, psychological, social, and environmental* factors.⁶⁰ The physical therapy principles posit that each individual has a maximum achievable movement potential (bounded by physical factors such as body structure as well as other factors), and a *current* and *preferred* movement ability that are affected by disease or injury. The role of the physical therapist is to determine the differential or *gap* between current and preferred movement abilities (what patients can do “now” and what they “would like” to be able to do) and address that gap in therapy.

The purpose of developing the MAM from the MCT was to operationalize the concepts of movement and the current-preferred movement ability gap and create a tool that would apply across all patients, including those with pathology as well as elite athletes. To operationalize movement, 6 dimensions were defined: flexibility, strength, accuracy, speed, adaptability, and endurance. These 6 dimensions were compiled based on motor control literature, design of robotic movement, and experience with patients in physical therapy, and met the criteria of being descriptive, efficient, distinct, measurable, and understandable.⁶⁰ The MAM is a self-report tool, presenting 24 items, with 4 items addressing each of the 6 dimensions. To operationalize the current-preferred movement ability gap, each MAM item presents 6 statements, and asks respondents to indicate which statement reflects how they move “now” and which statement reflects how they “would like” to be able to move (Figure 6.1). The resulting score (using interval scoring based on item-response theory methods) indicates the current-preferred gap in movement ability across the 6 dimensions, and identifies which movement dimension(s) have the largest gaps (Figure 6.2). Following through on the philosophy of the MCT, the dimensions with the largest current-preferred movement ability gaps should then become the focus of physical therapy.

The reliability and validity of the MAM have been evaluated in a cohort of patients, and responsiveness of the MAM has been established in an outpatient setting.^{61,63} Research has supported the concept of the current-preferred gap as an indicator of disability.⁶⁴ The MAM was refined with creation of a computerized-adaptive test version (the MAM-CAT).⁶⁵ The MAM-CAT has revealed that physical therapists and patients do not automatically align in which movement dimensions should be addressed in an episode of care, but that outcomes from outpatient therapy significantly improve when physical therapists and their clients review together the current-preferred gaps across the 6 dimensions.^{66,67}

The MAM and MAM-CAT provide patients/clients and physical therapists with a common language to discuss movement dimension priorities. Thus, it helps *engage* patients in the rehabilitative process. Further, identifying the movement dimension(s) with the largest current-preferred movement ability